SEQUENCE LISTING

<110> E. I. du Pont de Nemours and Company
Falco, Saverio Carl
Famodu, Omolayo O.
Orozco, Emil M.

<120> Plant 5,10-Methylenetetrahydrofolate Reductase Genes

<130> BB1179 US CIP

<150> US 09/720,451
<151> 2000-12-21

<150> PCT/US99/15916
<151> 1999-07-14

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   1               5                  10                  15

gtg aac gac tgt cgc caa att gga ata acg tgt cct att gta cct gga        95
Val Asn Asp Cys Arg Gln Ile Gly Ile Thr Cys Pro Ile Val Pro Gly
                20                  25                  30

att atg ccc att aat aat tac aag ggc ttt atc cgc atg act ggg ttt       143
Ile Met Pro Ile Asn Asn Tyr Lys Gly Phe Ile Arg Met Thr Gly Phe
            35                  40                  45

tgc aaa aca aag ata cca gct gac att atg gct gct tta gag cct atc       191
Cys Lys Thr Lys Ile Pro Ala Asp Ile Met Ala Ala Leu Glu Pro Ile
        50                  55                  60

aag gac aat gaa gaa gct gtc aag gct tat gga att cac ctg gga act       239
Lys Asp Asn Glu Glu Ala Val Lys Ala Tyr Gly Ile His Leu Gly Thr
    65                  70                  75

gaa atg tgc aaa aag att tta gct cat gga att aag aca ttg cat ctt       287
Glu Met Cys Lys Lys Ile Leu Ala His Gly Ile Lys Thr Leu His Leu
80                  85                  90                  95
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tat aca cta aat atg gag aaa tct gca ttg gca ata cta atg aac ctt      335
Tyr Thr Leu Asn Met Glu Lys Ser Ala Leu Ala Ile Leu Met Asn Leu
                100                 105                 110

ggc cta att gaa gag tcc aaa gtt tct agg tcc tta cct tgg aga cgc      383
Gly Leu Ile Glu Glu Ser Lys Val Ser Arg Ser Leu Pro Trp Arg Arg
            115                 120                 125

cct gca aat gtt ttc cgt gtt aaa gaa gat gtc cgt cca atc ttt tgg      431
Pro Ala Asn Val Phe Arg Val Lys Glu Asp Val Arg Pro Ile Phe Trp
        130                 135                 140

gca aat cga cca aaa agc tac ata tca agg acc ata gga tgg gat caa      479
Ala Asn Arg Pro Lys Ser Tyr Ile Ser Arg Thr Ile Gly Trp Asp Gln
    145                 150                 155

tac cca cat ggg cgt tgg ggt gat tcc tgt aat cca tca tat ggt gca      527
Tyr Pro His Gly Arg Trp Gly Asp Ser Cys Asn Pro Ser Tyr Gly Ala
160                 165                 170                 175

tta tct gat tat cag ttc atg cgg cca cgt g                           558
Leu Ser Asp Tyr Gln Phe Met Arg Pro Arg
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Asn Asp Cys Arg Gln Ile Gly Ile Thr Cys Pro Ile Val Pro Gly Ile
            20                  25                  30

Met Pro Ile Asn Asn Tyr Lys Gly Phe Ile Arg Met Thr Gly Phe Cys
        35                  40                  45

Lys Thr Lys Ile Pro Ala Asp Ile Met Ala Ala Leu Glu Pro Ile Lys
    50                  55                  60

Asp Asn Glu Glu Ala Val Lys Ala Tyr Gly Ile His Leu Gly Thr Glu
65                  70                  75                  80

Met Cys Lys Lys Ile Leu Ala His Gly Ile Lys Thr Leu His Leu Tyr
                85                  90                  95

Thr Leu Asn Met Glu Lys Ser Ala Leu Ala Ile Leu Met Asn Leu Gly
            100                 105                 110

Leu Ile Glu Glu Ser Lys Val Ser Arg Ser Leu Pro Trp Arg Arg Pro
        115                 120                 125

Ala Asn Val Phe Arg Val Lys Glu Asp Val Arg Pro Ile Phe Trp Ala
    130                 135                 140

Asn Arg Pro Lys Ser Tyr Ile Ser Arg Thr Ile Gly Trp Asp Gln Tyr
145                 150                 155                 160
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Pro His Gly Arg Trp Gly Asp Ser Cys Asn Pro Ser Tyr Gly Ala Leu
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Ser Asp Tyr Gln Phe Met Arg Pro Arg
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   1               5                  10                  15

gtg aac gac tgt cgc caa att gga ata acg tgt cct att gta cct gga        95
Val Asn Asp Cys Arg Gln Ile Gly Ile Thr Cys Pro Ile Val Pro Gly
                20                  25                  30

att atg ccc att aat aat tac aag ggc ttt atc cgc atg act ggg ttt       143
Ile Met Pro Ile Asn Asn Tyr Lys Gly Phe Ile Arg Met Thr Gly Phe
            35                  40                  45

tgc aaa aca aag ata cca gct gac att atg gct gct tta gag cct atc       191
Cys Lys Thr Lys Ile Pro Ala Asp Ile Met Ala Ala Leu Glu Pro Ile
        50                  55                  60

aag gac aat gaa gaa gct gtc aag gct tat gga att cac ctg gga act       239
Lys Asp Asn Glu Glu Ala Val Lys Ala Tyr Gly Ile His Leu Gly Thr
    65                  70                  75

gaa atg tgc aaa aag att tta gct cat gga att aag aca ttg cat ctt       287
Glu Met Cys Lys Lys Ile Leu Ala His Gly Ile Lys Thr Leu His Leu
80                  85                  90                  95

tat aca cta aat atg gag aaa tct gca ttg gca ata cta atg aac ctt       335
Tyr Thr Leu Asn Met Glu Lys Ser Ala Leu Ala Ile Leu Met Asn Leu
                100                 105                 110

ggc cta att gaa gag tcc aaa gtt tct agg tcc tta cct tgg aga cgc       383
Gly Leu Ile Glu Glu Ser Lys Val Ser Arg Ser Leu Pro Trp Arg Arg
            115                 120                 125

cct gca aat gtt ttc cgt gtt aaa gaa gat gtc cgt cca atc ttt tgg       431
Pro Ala Asn Val Phe Arg Val Lys Glu Asp Val Arg Pro Ile Phe Trp
        130                 135                 140

gca aat cga cca aaa agc tac ata tca agg acc ata gga tgg gat caa       479
Ala Asn Arg Pro Lys Ser Tyr Ile Ser Arg Thr Ile Gly Trp Asp Gln
    145                 150                 155

tac cca cat ggg cgt tgg ggt gat tcc tgt aat cca tca tat ggt gca       527
Tyr Pro His Gly Arg Trp Gly Asp Ser Cys Asn Pro Ser Tyr Gly Ala
160                 165                 170                 175
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tta tct gat tat cag ttc atg cgg cca cgt gca cgg gac aag aag ctt      575
Leu Ser Asp Tyr Gln Phe Met Arg Pro Arg Ala Arg Asp Lys Lys Leu
                180                 185                 190

gtt gaa gaa tgg gca gtt ccc ttg aaa agc gtt gaa gat ata tat gag      623
Val Glu Glu Trp Ala Val Pro Leu Lys Ser Val Glu Asp Ile Tyr Glu
            195                 200                 205

agg ttt aga ctg tat tgc ctt gga aag ttg aga agc aat cct tgg tca      671
Arg Phe Arg Leu Tyr Cys Leu Gly Lys Leu Arg Ser Asn Pro Trp Ser
        210                 215                 220

gaa ctt gat ggt ctt cag cct gag aca aag atc ata aat gag cag ctg      719
Glu Leu Asp Gly Leu Gln Pro Glu Thr Lys Ile Ile Asn Glu Gln Leu
    225                 230                 235

gag aag att aac aca aag ggc ttc ctc acc atc aat agc cag cca gct      767
Glu Lys Ile Asn Thr Lys Gly Phe Leu Thr Ile Asn Ser Gln Pro Ala
240                 245                 250                 255

gtc aat ggg gaa aag tca gat tct cct act gta ggc tgg ggt gga cct      815
Val Asn Gly Glu Lys Ser Asp Ser Pro Thr Val Gly Trp Gly Gly Pro
                260                 265                 270

ggt ggg tat gtt tat cag aag gca tat gta gag ttc ttc tgc tct aag      863
Gly Gly Tyr Val Tyr Gln Lys Ala Tyr Val Glu Phe Phe Cys Ser Lys
            275                 280                 285

gaa aag ctg gat gca ctt gtt gat aaa tgc aag gat cga aca tct tta      911
Glu Lys Leu Asp Ala Leu Val Asp Lys Cys Lys Asp Arg Thr Ser Leu
        290                 295                 300

act tat atg gct gtg aat aaa gat ggg agc tgg aaa tct aat gtg ggt      959
Thr Tyr Met Ala Val Asn Lys Asp Gly Ser Trp Lys Ser Asn Val Gly
    305                 310                 315

caa act gac gtt aat gct gtg aca tgg ggt gtc ttc cca gct aag gag     1007
Gln Thr Asp Val Asn Ala Val Thr Trp Gly Val Phe Pro Ala Lys Glu
320                 325                 330                 335

ata att caa cca acc att gta gat cct gtc agc ttc aat gta tgg aag     1055
Ile Ile Gln Pro Thr Ile Val Asp Pro Val Ser Phe Asn Val Trp Lys
                340                 345                 350

gat gag gca ttt gaa att tgg tca aga gga tgg gca agc ttg tac cct     1103
Asp Glu Ala Phe Glu Ile Trp Ser Arg Gly Trp Ala Ser Leu Tyr Pro
            355                 360                 365

gag gat gag gca tcc agg aaa ttg gtt gaa gag gtt ggg ggc agc cac     1151
Glu Asp Glu Ala Ser Arg Lys Leu Val Glu Glu Val Gly Gly Ser His
        370                 375                 380

ttc ttg gtt agt ttg gtc gac aat gat tac atc aat ggt gat ctt ttt     1199
Phe Leu Val Ser Leu Val Asp Asn Asp Tyr Ile Asn Gly Asp Leu Phe
    385                 390                 395

gcc gtc ttt gca gat ttc tgacatgagc ttattattta ttagtacttt           1247
Ala Val Phe Ala Asp Phe
400                 405
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agctatgtca cttctgttgg ttgtcatgtt cttttccttt cttttgtttt cttctcagta 1307
tgatgattca tattacacat ggttctaagt tgaagtgcca aattattttt ctgggctatg 1367
tccctaacgt ctttatattt tcattcttca aagtcgcatg ggtaacctgt acgttgacat 1427
aaggacaagt tactccttcc tctgaattgg atgtttctta atatatataa tgagtgaact 1487
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Asn Asp Cys Arg Gln Ile Gly Ile Thr Cys Pro Ile Val Pro Gly Ile
20 25 30

Met Pro Ile Asn Asn Tyr Lys Gly Phe Ile Arg Met Thr Gly Phe Cys
35 40 45

Lys Thr Lys Ile Pro Ala Asp Ile Met Ala Ala Leu Glu Pro Ile Lys
50 55 60

Asp Asn Glu Glu Ala Val Lys Ala Tyr Gly Ile His Leu Gly Thr Glu
65 70 75 80

Met Cys Lys Lys Ile Leu Ala His Gly Ile Lys Thr Leu His Leu Tyr
85 90 95

Thr Leu Asn Met Glu Lys Ser Ala Leu Ala Ile Leu Met Asn Leu Gly
100 105 110

Leu Ile Glu Glu Ser Lys Val Ser Arg Ser Leu Pro Trp Arg Arg Pro
115 120 125

Ala Asn Val Phe Arg Val Lys Glu Asp Val Arg Pro Ile Phe Trp Ala
130 135 140

Asn Arg Pro Lys Ser Tyr Ile Ser Arg Thr Ile Gly Trp Asp Gln Tyr
145 150 155 160

Pro His Gly Arg Trp Gly Asp Ser Cys Asn Pro Ser Tyr Gly Ala Leu
165 170 175

Ser Asp Tyr Gln Phe Met Arg Pro Arg Ala Arg Asp Lys Lys Leu Val
180 185 190

Glu Glu Trp Ala Val Pro Leu Lys Ser Val Glu Asp Ile Tyr Glu Arg
195 200 205

Phe Arg Leu Tyr Cys Leu Gly Lys Leu Arg Ser Asn Pro Trp Ser Glu
210 215 220

Leu Asp Gly Leu Gln Pro Glu Thr Lys Ile Ile Asn Glu Gln Leu Glu
225 230 235 240

Lys Ile Asn Thr Lys Gly Phe Leu Thr Ile Asn Ser Gln Pro Ala Val
245 250 255

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Asn Gly Glu Lys Ser Asp Ser Pro Thr Val Gly Trp Gly Gly Pro Gly
            260                 265                 270

Gly Tyr Val Tyr Gln Lys Ala Tyr Val Glu Phe Phe Cys Ser Lys Glu
        275                 280                 285

Lys Leu Asp Ala Leu Val Asp Lys Cys Lys Asp Arg Thr Ser Leu Thr
    290                 295                 300

Tyr Met Ala Val Asn Lys Asp Gly Ser Trp Lys Ser Asn Val Gly Gln
305                 310                 315                 320

Thr Asp Val Asn Ala Val Thr Trp Gly Val Phe Pro Ala Lys Glu Ile
                325                 330                 335

Ile Gln Pro Thr Ile Val Asp Pro Val Ser Phe Asn Val Trp Lys Asp
            340                 345                 350

Glu Ala Phe Glu Ile Trp Ser Arg Gly Trp Ala Ser Leu Tyr Pro Glu
        355                 360                 365

Asp Glu Ala Ser Arg Lys Leu Val Glu Glu Val Gly Gly Ser His Phe
    370                 375                 380

Leu Val Ser Leu Val Asp Asn Asp Tyr Ile Asn Gly Asp Leu Phe Ala
385                 390                 395                 400

Val Phe Ala Asp Phe
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gag aaa att cac gca gcc tcg gct gat cca aac agg gtg gtg ttc tca      104
Glu Lys Ile His Ala Ala Ser Ala Asp Pro Asn Arg Val Val Phe Ser
5                   10                  15                  20

ttt gag ttc ttc ccg ccc aag act gag gat ggg gtg gac aat ctg ttt      152
Phe Glu Phe Phe Pro Pro Lys Thr Glu Asp Gly Val Asp Asn Leu Phe
                25                  30                  35

gag agg atg gac cgc atg gtg gtg cac aac ccc tcg ttt tgc gac atc      200
Glu Arg Met Asp Arg Met Val Val His Asn Pro Ser Phe Cys Asp Ile
            40                  45                  50

act tgg ggt gct gga ggg aca acg gct gat ctt aca ttg gaa att gcc      248
Thr Trp Gly Ala Gly Gly Thr Thr Ala Asp Leu Thr Leu Glu Ile Ala
        55                  60                  65
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aac aag atg cag aac att gtc tgt gtg gag acc atg atg cac ctc acc      296
Asn Lys Met Gln Asn Ile Val Cys Val Glu Thr Met Met His Leu Thr
    70                  75                  80

tgc acc aac atg cct gtt gag aag att gac cat gct ctc cac acc atc      344
Cys Thr Asn Met Pro Val Glu Lys Ile Asp His Ala Leu His Thr Ile
85                  90                  95                  100

aag tcc aat ggc ctc caa aat gtg ctt gca ctt cga ggt gat cca ccg      392
Lys Ser Asn Gly Leu Gln Asn Val Leu Ala Leu Arg Gly Asp Pro Pro
                105                 110                 115

cat ggt cag gac aaa ttc gtc cag gtc gaa ggc ggc ttt gcc tgt gca      440
His Gly Gln Asp Lys Phe Val Gln Val Glu Gly Gly Phe Ala Cys Ala
            120                 125                 130

cgc gac ttg gtg caa cat atc aga gct aaa tat ggt gac tac ttt ggc      488
Arg Asp Leu Val Gln His Ile Arg Ala Lys Tyr Gly Asp Tyr Phe Gly
        135                 140                 145

att aca gtc gct ggt tat cca gag gca cat ccg gat gtt ata gaa agt      536
Ile Thr Val Ala Gly Tyr Pro Glu Ala His Pro Asp Val Ile Glu Ser
    150                 155                 160

gat ggg ttg gct aca tca gag ggt tat caa aat gat ctt gct tac ttg      584
Asp Gly Leu Ala Thr Ser Glu Gly Tyr Gln Asn Asp Leu Ala Tyr Leu
165                 170                 175                 180

aag agc aag gtt gat gct gga gca gat ctg att gtc act cag tta ttt      632
Lys Ser Lys Val Asp Ala Gly Ala Asp Leu Ile Val Thr Gln Leu Phe
                185                 190                 195

tat gat acg gat ata ttc ctc aaa ttt gtg aac gac tgt cgc caa att      680
Tyr Asp Thr Asp Ile Phe Leu Lys Phe Val Asn Asp Cys Arg Gln Ile
            200                 205                 210

gga ata acg tgc cct att gta cct gga att atg ccc att aat aat tac      728
Gly Ile Thr Cys Pro Ile Val Pro Gly Ile Met Pro Ile Asn Asn Tyr
        215                 220                 225

aag ggc ttt atc cgc atg act ggg ttt tgc aaa aca aag ata cca gct      776
Lys Gly Phe Ile Arg Met Thr Gly Phe Cys Lys Thr Lys Ile Pro Ala
    230                 235                 240

gac att atg gct gct tta gag cct atc aag gac aac gaa gaa gct gtc      824
Asp Ile Met Ala Ala Leu Glu Pro Ile Lys Asp Asn Glu Glu Ala Val
245                 250                 255                 260

aag gct tat gga att cac ctg gga act gaa atg tgc aaa aag att tta      872
Lys Ala Tyr Gly Ile His Leu Gly Thr Glu Met Cys Lys Lys Ile Leu
                265                 270                 275

gct cat gga att aat aca ttg cat ctt tat aca cta aat atg gag aaa      920
Ala His Gly Ile Asn Thr Leu His Leu Tyr Thr Leu Asn Met Glu Lys
            280                 285                 290

tcg gca tta gcg ata cta atg aac ctt ggc cta att gaa gag acc aaa      968
Ser Ala Leu Ala Ile Leu Met Asn Leu Gly Leu Ile Glu Glu Thr Lys
        295                 300                 305
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gtt tct agg tcc tta cct tgg aga cgc cct gca aat gtt ttc cgt gtt     1016
Val Ser Arg Ser Leu Pro Trp Arg Arg Pro Ala Asn Val Phe Arg Val
    310                 315                 320

aaa gaa gat gtc cgt cca atc ttt tgg gca aat cgt cca aaa agc tac     1064
Lys Glu Asp Val Arg Pro Ile Phe Trp Ala Asn Arg Pro Lys Ser Tyr
325                 330                 335                 340

ata tca agg aca ata gga tgg gat caa tac cca cac ggg cgt tgg ggt     1112
Ile Ser Arg Thr Ile Gly Trp Asp Gln Tyr Pro His Gly Arg Trp Gly
                345                 350                 355

gat tcc tgt aat cca tca tat ggt gca tta tct gat tat cag ttc atg     1160
Asp Ser Cys Asn Pro Ser Tyr Gly Ala Leu Ser Asp Tyr Gln Phe Met
            360                 365                 370

cgg cca cgt gca cgg gac aag aag ctt gtt gaa gaa tgg gca gtt ccc     1208
Arg Pro Arg Ala Arg Asp Lys Lys Leu Val Glu Glu Trp Ala Val Pro
        375                 380                 385

ttg aaa agc att gaa gat ata tat gag agg ttt aga ctg tat tgt ctt     1256
Leu Lys Ser Ile Glu Asp Ile Tyr Glu Arg Phe Arg Leu Tyr Cys Leu
    390                 395                 400

gga aag ttg aga agc aat cct tgg tca gaa cta gat ggt ctt cag cca     1304
Gly Lys Leu Arg Ser Asn Pro Trp Ser Glu Leu Asp Gly Leu Gln Pro
405                 410                 415                 420

gag aca aag ata ata aat gag ctg ctg gaa aag att aac aca aag ggc     1352
Glu Thr Lys Ile Ile Asn Glu Leu Leu Glu Lys Ile Asn Thr Lys Gly
                425                 430                 435

ttc ctc acc atc aat agc cag cca gct gtc aat ggg gaa aag tca gat     1400
Phe Leu Thr Ile Asn Ser Gln Pro Ala Val Asn Gly Glu Lys Ser Asp
            440                 445                 450

tct cct act gtt ggc tgg ggt gga cca ggc ggg tat gtt tac cag aag     1448
Ser Pro Thr Val Gly Trp Gly Gly Pro Gly Gly Tyr Val Tyr Gln Lys
        455                 460                 465

gca tat gta gag ttc ttc tgc tct aag gaa aag ctg gat gca ctt gtt     1496
Ala Tyr Val Glu Phe Phe Cys Ser Lys Glu Lys Leu Asp Ala Leu Val
    470                 475                 480

gat aaa tgc aag gat cga aca tct tta act tat atg gct gtg aat aaa     1544
Asp Lys Cys Lys Asp Arg Thr Ser Leu Thr Tyr Met Ala Val Asn Lys
485                 490                 495                 500

gac ggg agc tgg aaa tct aat gtg ggt caa act gat gtt aat gct gtg     1592
Asp Gly Ser Trp Lys Ser Asn Val Gly Gln Thr Asp Val Asn Ala Val
                505                 510                 515

aca tgg ggt gtc ttc cca gct aag gag ata att caa cca acc att gtt     1640
Thr Trp Gly Val Phe Pro Ala Lys Glu Ile Ile Gln Pro Thr Ile Val
            520                 525                 530

gat cct gtc agc ttc aat gta tgg aag gat gag gca ttt gaa att tgg     1688
Asp Pro Val Ser Phe Asn Val Trp Lys Asp Glu Ala Phe Glu Ile Trp
        535                 540                 545
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tca aga gga tgg gca agc ttg tac cct gag ggt gat gca tcc agg aaa     1736
Ser Arg Gly Trp Ala Ser Leu Tyr Pro Glu Gly Asp Ala Ser Arg Lys
    550                 555                 560

ttg gtt gaa gag gtt ggg ggc agc tac ttc ttg gtg agt ttg gtc gac     1784
Leu Val Glu Glu Val Gly Gly Ser Tyr Phe Leu Val Ser Leu Val Asp
565                 570                 575                 580

aat gat tac atc aat ggt gat ctt ttc acc gtc ttt gca gat ttc          1829
Asn Asp Tyr Ile Asn Gly Asp Leu Phe Thr Val Phe Ala Asp Phe
                585                 590                 595

tgacatgagc ttattattta ttagttcttt agttatgtca cttctgttcg ttgtcatgtt   1889
cctttccttt cttttgtttt cttctcagta ggatggttca tattacacgt ggttctaagt   1949
tgaagtacca aattattttt ctgggctttg tcccaaacat ctttatttt tcattcttct    2009
gagtcgcatg agtaacctgt acgttgactt aaggacaagt tactccttcc tttgaattcg   2069
atgtttctta actgtgaaag tagaatatcg aagtcttgtg tgttatattt tgcttttatt   2129
tcttttctct gagaaccttg tcatcattgg catttgagaa aaaaaaatca tgtatattac   2189
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            20                  25                  30

Asp Asn Leu Phe Glu Arg Met Asp Arg Met Val Val His Asn Pro Ser
        35                  40                  45

Phe Cys Asp Ile Thr Trp Gly Ala Gly Gly Thr Thr Ala Asp Leu Thr
    50                  55                  60

Leu Glu Ile Ala Asn Lys Met Gln Asn Ile Val Cys Val Glu Thr Met
65                  70                  75                  80

Met His Leu Thr Cys Thr Asn Met Pro Val Glu Lys Ile Asp His Ala
                85                  90                  95

Leu His Thr Ile Lys Ser Asn Gly Leu Gln Asn Val Leu Ala Leu Arg
            100                 105                 110

Gly Asp Pro Pro His Gly Gln Asp Lys Phe Val Gln Val Glu Gly Gly
        115                 120                 125

Phe Ala Cys Ala Arg Asp Leu Val Gln His Ile Arg Ala Lys Tyr Gly
    130                 135                 140

Asp Tyr Phe Gly Ile Thr Val Ala Gly Tyr Pro Glu Ala His Pro Asp
145                 150                 155                 160

Val Ile Glu Ser Asp Gly Leu Ala Thr Ser Glu Gly Tyr Gln Asn Asp
                165                 170                 175
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Leu Ala Tyr Leu Lys Ser Lys Val Asp Ala Gly Ala Asp Leu Ile Val
            180                 185                 190

Thr Gln Leu Phe Tyr Asp Thr Asp Ile Phe Leu Lys Phe Val Asn Asp
        195                 200                 205

Cys Arg Gln Ile Gly Ile Thr Cys Pro Ile Val Pro Gly Ile Met Pro
    210                 215                 220

Ile Asn Asn Tyr Lys Gly Phe Ile Arg Met Thr Gly Phe Cys Lys Thr
225                 230                 235                 240

Lys Ile Pro Ala Asp Ile Met Ala Ala Leu Glu Pro Ile Lys Asp Asn
                245                 250                 255

Glu Glu Ala Val Lys Ala Tyr Gly Ile His Leu Gly Thr Glu Met Cys
            260                 265                 270

Lys Lys Ile Leu Ala His Gly Ile Asn Thr Leu His Leu Tyr Thr Leu
        275                 280                 285

Asn Met Glu Lys Ser Ala Leu Ala Ile Leu Met Asn Leu Gly Leu Ile
    290                 295                 300

Glu Glu Thr Lys Val Ser Arg Ser Leu Pro Trp Arg Arg Pro Ala Asn
305                 310                 315                 320

Val Phe Arg Val Lys Glu Asp Val Arg Pro Ile Phe Trp Ala Asn Arg
                325                 330                 335

Pro Lys Ser Tyr Ile Ser Arg Thr Ile Gly Trp Asp Gln Tyr Pro His
            340                 345                 350

Gly Arg Trp Gly Asp Ser Cys Asn Pro Ser Tyr Gly Ala Leu Ser Asp
        355                 360                 365

Tyr Gln Phe Met Arg Pro Arg Ala Arg Asp Lys Lys Leu Val Glu Glu
    370                 375                 380

Trp Ala Val Pro Leu Lys Ser Ile Glu Asp Ile Tyr Glu Arg Phe Arg
385                 390                 395                 400

Leu Tyr Cys Leu Gly Lys Leu Arg Ser Asn Pro Trp Ser Glu Leu Asp
                405                 410                 415

Gly Leu Gln Pro Glu Thr Lys Ile Ile Asn Glu Leu Leu Glu Lys Ile
            420                 425                 430

Asn Thr Lys Gly Phe Leu Thr Ile Asn Ser Gln Pro Ala Val Asn Gly
        435                 440                 445

Glu Lys Ser Asp Ser Pro Thr Val Gly Trp Gly Gly Pro Gly Gly Tyr
    450                 455                 460

Val Tyr Gln Lys Ala Tyr Val Glu Phe Phe Cys Ser Lys Glu Lys Leu
465                 470                 475                 480

Asp Ala Leu Val Asp Lys Cys Lys Asp Arg Thr Ser Leu Thr Tyr Met
                485                 490                 495
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Ala Val Asn Lys Asp Gly Ser Trp Lys Ser Asn Val Gly Gln Thr Asp
            500                 505                 510

Val Asn Ala Val Thr Trp Gly Val Phe Pro Ala Lys Glu Ile Ile Gln
        515                 520                 525

Pro Thr Ile Val Asp Pro Val Ser Phe Asn Val Trp Lys Asp Glu Ala
    530                 535                 540

Phe Glu Ile Trp Ser Arg Gly Trp Ala Ser Leu Tyr Pro Glu Gly Asp
545                 550                 555                 560

Ala Ser Arg Lys Leu Val Glu Glu Val Gly Gly Ser Tyr Phe Leu Val
                565                 570                 575

Ser Leu Val Asp Asn Asp Tyr Ile Asn Gly Asp Leu Phe Thr Val Phe
            580                 585                 590

Ala Asp Phe
        595
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<212> DNA
<213> Triticum aestivum

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<220>
<221> CDS
<222> (108)..(332)

<220>
<221> misc_feature
<222> (115)..(115)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (120)..(120)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (176)..(176)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (347)..(347)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (371)..(371)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (426)..(426)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (442)..(442)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (445)..(445)
<223> n is a, c, g, or t

<400> 7
g gag cac att aaa gcc aag tat ggn gat tac ttt ggc ata act gtc gct 49
Glu His Ile Lys Ala Lys Tyr Gly Asp Tyr Phe Gly Ile Thr Val Ala
1 5 10 15

ggc tat cca gag gca cac cct gag gtaatactaa cgcgaggaag gtgctacgga 103
Gly Tyr Pro Glu Ala His Pro Glu
20

ggaa gca tat anc aaa nat ctt gct tac ttg aag aga aag gtt gat gct 152
Ala Tyr Xaa Lys Xaa Leu Ala Tyr Leu Lys Arg Lys Val Asp Ala
25 30 35

ggt gct gac gtt ata atc acc can ctt ttc tat gat acc gat atc ttt 200
Gly Ala Asp Val Ile Ile Thr Xaa Leu Phe Tyr Asp Thr Asp Ile Phe
40 45 50 55

ctc aag ttt gtg aac gac tgc cgt cag att ggt ata acc tgc cct atc 248
Leu Lys Phe Val Asn Asp Cys Arg Gln Ile Gly Ile Thr Cys Pro Ile
60 65 70

gtt cct ggc ata atg cca ata aat aac tac aaa gga ttt gtg cgc atg 296
Val Pro Gly Ile Met Pro Ile Asn Asn Tyr Lys Gly Phe Val Arg Met
75 80 85

act gga ttc tgc aaa act aaa att cca cct gag att actgctgcct 342
Thr Gly Phe Cys Lys Thr Lys Ile Pro Pro Glu Ile
90 95

tgggntccta ctaaagacaa tgaggaggnt gtgaaaagca tatgggatcc accctggtac 402
tgaagatgtt caaaaaaaat tttnggctag tgggataaan acnttgcac 451

<210> 8
<211> 24
<212> PRT
<213> Triticum aestivum

<400> 8
Glu His Ile Lys Ala Lys Tyr Gly Asp Tyr Phe Gly Ile Thr Val Ala
1 5 10 15

```
Gly Tyr Pro Glu Ala His Pro Glu
            20

<210>  9
<211>  75
<212>  PRT
<213>  Triticum aestivum

<220>
<221>  misc_feature
<222>  (3)..(3)
<223>  The 'Xaa' at location 3 stands for Asn, Ser, Thr, or Ile.

<220>
<221>  misc_feature
<222>  (5)..(5)
<223>  The 'Xaa' at location 5 stands for Asn, Asp, His, or Tyr.

<220>
<221>  misc_feature
<222>  (23)..(23)
<223>  The 'Xaa' at location 23 stands for Gln, or His.

<400>  9
Ala Tyr Xaa Lys Xaa Leu Ala Tyr Leu Lys Arg Lys Val Asp Ala Gly
1               5                   10                  15

Ala Asp Val Ile Ile Thr Xaa Leu Phe Tyr Asp Thr Asp Ile Phe Leu
            20                  25                  30

Lys Phe Val Asn Asp Cys Arg Gln Ile Gly Ile Thr Cys Pro Ile Val
        35                  40                  45

Pro Gly Ile Met Pro Ile Asn Asn Tyr Lys Gly Phe Val Arg Met Thr
    50                  55                  60

Gly Phe Cys Lys Thr Lys Ile Pro Pro Glu Ile
65                  70                  75

<210>  10
<211>  1646
<212>  DNA
<213>  Triticum aestivum

<220>
<221>  CDS
<222>  (3)..(1397)

<400>  10
ct tgt gct cta gat ctg gtg gag cac att aaa gcc aag tat ggt gat        47
   Cys Ala Leu Asp Leu Val Glu His Ile Lys Ala Lys Tyr Gly Asp
   1               5                   10                  15

tac ttt ggc ata act gtc gct ggc tat cca gag gca cac cct gag gta       95
Tyr Phe Gly Ile Thr Val Ala Gly Tyr Pro Glu Ala His Pro Glu Val
                20                  25                  30
```

```
ata cta ggc gag gaa ggt gct acg gag gaa gca tat agc aaa gat ctt      143
Ile Leu Gly Glu Glu Gly Ala Thr Glu Glu Ala Tyr Ser Lys Asp Leu
            35                  40                  45

gct tac ttg aag aga aag gtt gat gct ggt gct gac gtt ata gtc acc      191
Ala Tyr Leu Lys Arg Lys Val Asp Ala Gly Ala Asp Val Ile Val Thr
        50                  55                  60

cag ctt ttc tat gat acc gat atc ttt ctc aag ttt gtg aac gac tgc      239
Gln Leu Phe Tyr Asp Thr Asp Ile Phe Leu Lys Phe Val Asn Asp Cys
    65                  70                  75

cgt cag att ggt ata acc tgc cct atc gtt cct ggc ata atg cca ata      287
Arg Gln Ile Gly Ile Thr Cys Pro Ile Val Pro Gly Ile Met Pro Ile
80                  85                  90                  95

aat aac tac aaa gga ttt gtg cgc atg act gga ttc tgc aaa act aag      335
Asn Asn Tyr Lys Gly Phe Val Arg Met Thr Gly Phe Cys Lys Thr Lys
                100                 105                 110

att cca gct gag att act gct gcc ttg gat cct att aaa gac aat gag      383
Ile Pro Ala Glu Ile Thr Ala Ala Leu Asp Pro Ile Lys Asp Asn Glu
            115                 120                 125

gag gct gtg aaa gca tat gga atc cac ctt ggt act gag atg tgc aag      431
Glu Ala Val Lys Ala Tyr Gly Ile His Leu Gly Thr Glu Met Cys Lys
        130                 135                 140

aaa att ttg gct agt ggg atc aag act ttg cac ctg tac aca cta aac      479
Lys Ile Leu Ala Ser Gly Ile Lys Thr Leu His Leu Tyr Thr Leu Asn
    145                 150                 155

atg gag aag act gct tta gca att ctg atg aat ctt ggc tta ata gag      527
Met Glu Lys Thr Ala Leu Ala Ile Leu Met Asn Leu Gly Leu Ile Glu
160                 165                 170                 175

gag tcc aag ctt tca aga aca tta cct tgg agg cca cca act aat gtt      575
Glu Ser Lys Leu Ser Arg Thr Leu Pro Trp Arg Pro Pro Thr Asn Val
                180                 185                 190

ttc cgt gtc aaa gag gat gtt cgc cct ata ttc tgg gcc aac aga cca      623
Phe Arg Val Lys Glu Asp Val Arg Pro Ile Phe Trp Ala Asn Arg Pro
            195                 200                 205

aag agt tac att tca agg acc act ggt tgg gat caa tac cca cat gga      671
Lys Ser Tyr Ile Ser Arg Thr Thr Gly Trp Asp Gln Tyr Pro His Gly
        210                 215                 220

cgg tgg ggt gat tcc agg aac cca tca tac ggt gca ctt aat gat cac      719
Arg Trp Gly Asp Ser Arg Asn Pro Ser Tyr Gly Ala Leu Asn Asp His
    225                 230                 235

cag ttc aca cgg cca cgt gga cgt ggt aag aag ctc caa gag gaa tgg      767
Gln Phe Thr Arg Pro Arg Gly Arg Gly Lys Lys Leu Gln Glu Glu Trp
240                 245                 250                 255

gct gtt cca ctg aaa tct gtg caa gac att aat gag cgg ttc gtg aac      815
Ala Val Pro Leu Lys Ser Val Gln Asp Ile Asn Glu Arg Phe Val Asn
                260                 265                 270
```

```
ttc tgt gaa gga aaa ctt aaa agc agc cca tgg tct gag tta gat ggt      863
Phe Cys Glu Gly Lys Leu Lys Ser Ser Pro Trp Ser Glu Leu Asp Gly
            275                 280                 285

ctt caa ccc gag acg acg ata att gac gat cag ctg gtg aag att aac      911
Leu Gln Pro Glu Thr Thr Ile Ile Asp Asp Gln Leu Val Lys Ile Asn
        290                 295                 300

tca aag ggt ttc ctt acc atc aac agc caa cct gct gta aat gca gag      959
Ser Lys Gly Phe Leu Thr Ile Asn Ser Gln Pro Ala Val Asn Ala Glu
    305                 310                 315

aaa tct gag tct cct agt gtt gga tgg ggc ggc cca gga ggc tat gtt     1007
Lys Ser Glu Ser Pro Ser Val Gly Trp Gly Gly Pro Gly Gly Tyr Val
320                 325                 330                 335

tac cag aag gcc tac gtc gaa ttc ttc tgc gct aag gag aag ctg ggc     1055
Tyr Gln Lys Ala Tyr Val Glu Phe Phe Cys Ala Lys Glu Lys Leu Gly
                340                 345                 350

caa ctc atc gag aag agc aag gca ttc cct tcc ctc acg tac atc gcc     1103
Gln Leu Ile Glu Lys Ser Lys Ala Phe Pro Ser Leu Thr Tyr Ile Ala
            355                 360                 365

gtg aac aag gaa ggg gaa tcg atc tca aac atc cct gcg aac gcc gtg     1151
Val Asn Lys Glu Gly Glu Ser Ile Ser Asn Ile Pro Ala Asn Ala Val
        370                 375                 380

aat gct gtc aca tgg ggt gtg ttc ccc ggc aag gag atc atc cag cct     1199
Asn Ala Val Thr Trp Gly Val Phe Pro Gly Lys Glu Ile Ile Gln Pro
    385                 390                 395

acc gtc gtt gac tca gcg agc ttc atg gtc tgg aaa gat gaa gcg ttt     1247
Thr Val Val Asp Ser Ala Ser Phe Met Val Trp Lys Asp Glu Ala Phe
400                 405                 410                 415

gag atc tgg tcc agg gga tgg gcc tgc ctg ttc cca gag ggc gac tcg     1295
Glu Ile Trp Ser Arg Gly Trp Ala Cys Leu Phe Pro Glu Gly Asp Ser
                420                 425                 430

tcc agg gag ttg cta gag cag att cag aag agc tat tac ttg gtc agc     1343
Ser Arg Glu Leu Leu Glu Gln Ile Gln Lys Ser Tyr Tyr Leu Val Ser
            435                 440                 445

ctc gtg gac aat gac tac atc agc ggg gac ctc ttt gct gca ttc aag     1391
Leu Val Asp Asn Asp Tyr Ile Ser Gly Asp Leu Phe Ala Ala Phe Lys
        450                 455                 460

gag atc taatttcgat gagaccttac agtatgctgc gtttgaccgc ccttcgctag      1447
Glu Ile
    465

agtcctgtaa tatgatttgt cgtgatttct gtcgatttat ccaaaccact ctatgaataa   1507
gaattttcta tctgtgttca aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa   1567
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa   1627
aaaaaaaaaa aaaaaaaaa                                               1646

<210>  11
<211>  465
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<212> PRT
<213> Triticum aestivum

<400> 11
Cys Ala Leu Asp Leu Val Glu His Ile Lys Ala Lys Tyr Gly Asp Tyr
1 5 10 15

Phe Gly Ile Thr Val Ala Gly Tyr Pro Glu Ala His Pro Glu Val Ile
20 25 30

Leu Gly Glu Glu Gly Ala Thr Glu Glu Ala Tyr Ser Lys Asp Leu Ala
35 40 45

Tyr Leu Lys Arg Lys Val Asp Ala Gly Ala Asp Val Ile Val Thr Gln
50 55 60

Leu Phe Tyr Asp Thr Asp Ile Phe Leu Lys Phe Val Asn Asp Cys Arg
65 70 75 80

Gln Ile Gly Ile Thr Cys Pro Ile Val Pro Gly Ile Met Pro Ile Asn
85 90 95

Asn Tyr Lys Gly Phe Val Arg Met Thr Gly Phe Cys Lys Thr Lys Ile
100 105 110

Pro Ala Glu Ile Thr Ala Ala Leu Asp Pro Ile Lys Asp Asn Glu Glu
115 120 125

Ala Val Lys Ala Tyr Gly Ile His Leu Gly Thr Glu Met Cys Lys Lys
130 135 140

Ile Leu Ala Ser Gly Ile Lys Thr Leu His Leu Tyr Thr Leu Asn Met
145 150 155 160

Glu Lys Thr Ala Leu Ala Ile Leu Met Asn Leu Gly Leu Ile Glu Glu
165 170 175

Ser Lys Leu Ser Arg Thr Leu Pro Trp Arg Pro Pro Thr Asn Val Phe
180 185 190

Arg Val Lys Glu Asp Val Arg Pro Ile Phe Trp Ala Asn Arg Pro Lys
195 200 205

Ser Tyr Ile Ser Arg Thr Thr Gly Trp Asp Gln Tyr Pro His Gly Arg
210 215 220

Trp Gly Asp Ser Arg Asn Pro Ser Tyr Gly Ala Leu Asn Asp His Gln
225 230 235 240

Phe Thr Arg Pro Arg Gly Arg Gly Lys Lys Leu Gln Glu Glu Trp Ala
245 250 255

Val Pro Leu Lys Ser Val Gln Asp Ile Asn Glu Arg Phe Val Asn Phe
260 265 270

Cys Glu Gly Lys Leu Lys Ser Ser Pro Trp Ser Glu Leu Asp Gly Leu
275 280 285

Gln Pro Glu Thr Thr Ile Ile Asp Asp Gln Leu Val Lys Ile Asn Ser
290 295 300

```
Lys Gly Phe Leu Thr Ile Asn Ser Gln Pro Ala Val Asn Ala Glu Lys
305                 310                 315                 320

Ser Glu Ser Pro Ser Val Gly Trp Gly Gly Pro Gly Gly Tyr Val Tyr
                325                 330                 335

Gln Lys Ala Tyr Val Glu Phe Phe Cys Ala Lys Glu Lys Leu Gly Gln
            340                 345                 350

Leu Ile Glu Lys Ser Lys Ala Phe Pro Ser Leu Thr Tyr Ile Ala Val
        355                 360                 365

Asn Lys Glu Gly Glu Ser Ile Ser Asn Ile Pro Ala Asn Ala Val Asn
    370                 375                 380

Ala Val Thr Trp Gly Val Phe Pro Gly Lys Glu Ile Ile Gln Pro Thr
385                 390                 395                 400

Val Val Asp Ser Ala Ser Phe Met Val Trp Lys Asp Glu Ala Phe Glu
                405                 410                 415

Ile Trp Ser Arg Gly Trp Ala Cys Leu Phe Pro Glu Gly Asp Ser Ser
            420                 425                 430

Arg Glu Leu Leu Glu Gln Ile Gln Lys Ser Tyr Tyr Leu Val Ser Leu
        435                 440                 445

Val Asp Asn Asp Tyr Ile Ser Gly Asp Leu Phe Ala Ala Phe Lys Glu
    450                 455                 460

Ile
465
```

<210> 12
<211> 592
<212> PRT
<213> Arabidopsis thaliana

<400> 12

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Met Lys Val Val Asp Lys Ile Lys Ser Val Thr Glu Gln Gly Gln Thr
1               5                   10                  15

Ala Phe Ser Phe Glu Phe Phe Pro Pro Lys Thr Glu Asp Gly Val Glu
            20                  25                  30

Asn Leu Phe Glu Arg Met Asp Arg Leu Val Ser Tyr Gly Pro Thr Phe
        35                  40                  45

Cys Asp Ile Thr Trp Gly Ala Gly Gly Ser Thr Ala Asp Leu Thr Leu
    50                  55                  60

Glu Ile Ala Ser Arg Met Gln Asn Val Ile Cys Val Glu Thr Met Met
65                  70                  75                  80

His Leu Thr Cys Thr Asn Met Pro Ile Glu Lys Ile Asp His Ala Leu
                85                  90                  95

Glu Thr Ile Arg Ser Asn Gly Ile Gln Asn Val Leu Ala Leu Arg Gly
            100                 105                 110
```

```
Asp Pro Pro His Gly Gln Asp Lys Phe Val Gln Val Glu Gly Gly Phe
        115                 120                 125

Ala Cys Ala Leu Asp Leu Val Asn His Ile Arg Ser Lys Tyr Gly Asp
    130                 135                 140

Tyr Phe Gly Ile Thr Val Ala Gly Tyr Pro Glu Ala His Pro Asp Val
145                 150                 155                 160

Ile Glu Ala Asp Gly Leu Ala Thr Pro Glu Ser Tyr Gln Ser Asp Leu
                165                 170                 175

Ala Tyr Leu Lys Lys Lys Val Asp Ala Gly Ala Asp Leu Ile Val Thr
            180                 185                 190

Gln Leu Phe Tyr Asp Thr Asp Ile Phe Leu Lys Phe Val Asn Asp Cys
        195                 200                 205

Arg Gln Ile Gly Ile Asn Cys Pro Ile Val Pro Gly Ile Met Pro Ile
    210                 215                 220

Ser Asn Tyr Lys Gly Phe Leu Arg Met Ala Gly Phe Cys Lys Thr Lys
225                 230                 235                 240

Ile Pro Ala Glu Leu Thr Ala Ala Leu Glu Pro Ile Lys Asp Asn Asp
                245                 250                 255

Glu Ala Val Lys Ala Tyr Gly Ile His Phe Ala Thr Glu Met Cys Lys
            260                 265                 270

Lys Ile Leu Ala His Gly Ile Thr Ser Leu His Leu Tyr Thr Leu Asn
        275                 280                 285

Val Asp Lys Ser Ala Ile Gly Ile Leu Met Asn Leu Gly Leu Ile Asp
    290                 295                 300

Glu Ser Lys Ile Ser Arg Ser Leu Pro Trp Arg Arg Pro Ala Asn Val
305                 310                 315                 320

Phe Arg Thr Lys Glu Asp Val Arg Pro Ile Phe Trp Ala Asn Arg Pro
                325                 330                 335

Lys Ser Tyr Ile Ser Arg Thr Lys Gly Trp Asn Asp Phe Pro His Gly
            340                 345                 350

Arg Trp Gly Asp Ser His Ser Ala Ala Tyr Ser Thr Leu Ser Asp Tyr
        355                 360                 365

Gln Phe Ala Arg Pro Lys Gly Arg Asp Lys Lys Leu Gln Gln Glu Trp
    370                 375                 380

Val Val Pro Leu Lys Ser Ile Glu Asp Val Gln Glu Lys Phe Lys Glu
385                 390                 395                 400

Leu Cys Ile Gly Asn Leu Lys Ser Ser Pro Trp Ser Glu Leu Asp Gly
                405                 410                 415

Leu Gln Pro Glu Thr Lys Ile Ile Asn Glu Gln Leu Gly Lys Ile Asn
            420                 425                 430
```

Ser Asn Gly Phe Leu Thr Ile Asn Ser Gln Pro Ser Val Asn Ala Ala
435 440 445

Lys Ser Asp Ser Pro Ala Ile Gly Trp Gly Gly Pro Gly Gly Tyr Val
450 455 460

Tyr Gln Lys Ala Tyr Leu Glu Phe Phe Cys Ser Lys Asp Lys Leu Asp
465 470 475 480

Thr Leu Val Glu Lys Ser Lys Ala Phe Pro Ser Ile Thr Tyr Met Ala
485 490 495

Val Asn Lys Ser Glu Asn Trp Val Ser Asn Thr Gly Glu Ser Asp Val
500 505 510

Asn Ala Val Thr Trp Gly Val Phe Pro Ala Lys Glu Val Ile Gln Pro
515 520 525

Thr Ile Val Asp Pro Ala Ser Phe Lys Val Trp Lys Asp Glu Ala Phe
530 535 540

Glu Ile Trp Ser Arg Ser Trp Ala Asn Leu Tyr Pro Glu Asp Asp Pro
545 550 555 560

Ser Arg Lys Leu Leu Glu Glu Val Lys Asn Ser Tyr Tyr Leu Val Ser
565 570 575

Leu Val Asp Asn Asn Tyr Ile Asn Gly Asp Ile Phe Ser Val Phe Ala
580 585 590

<210> 13
<211> 594
<212> PRT
<213> Arabidopsis thaliana

<400> 13
Met Lys Val Ile Asp Lys Ile Gln Ser Leu Ala Asp Glu Gly Lys Thr
1 5 10 15

Ala Phe Ser Phe Glu Phe Phe Pro Pro Lys Thr Glu Asp Gly Val Asp
20 25 30

Asn Leu Phe Glu Arg Met Asp Arg Met Val Ala Tyr Gly Pro Thr Phe
35 40 45

Cys Asp Ile Thr Trp Gly Ala Gly Gly Ser Thr Ala Asp Leu Thr Leu
50 55 60

Asp Ile Ala Ser Arg Met Gln Asn Val Val Cys Val Glu Ser Met Met
65 70 75 80

His Leu Thr Cys Thr Asn Met Pro Val Glu Lys Ile Asp His Ala Leu
85 90 95

Glu Thr Ile Arg Ser Asn Gly Ile Gln Asn Val Leu Ala Leu Arg Gly
100 105 110

Asp Pro Pro His Gly Gln Asp Lys Phe Val Gln Val Glu Gly Gly Phe
115 120 125

```
Asp Cys Ala Leu Asp Leu Val Asn His Ile Arg Ser Lys Tyr Gly Asp
    130                 135                 140

Tyr Phe Gly Ile Thr Val Ala Gly Tyr Pro Glu Ala His Pro Asp Val
145                 150                 155                 160

Ile Gly Glu Asn Gly Leu Ala Ser Asn Glu Ala Tyr Gln Ser Asp Leu
                165                 170                 175

Glu Tyr Leu Lys Lys Lys Ile Asp Ala Gly Ala Asp Leu Ile Val Thr
            180                 185                 190

Gln Leu Phe Tyr Asp Thr Asp Ile Phe Leu Lys Phe Val Asn Asp Cys
        195                 200                 205

Arg Gln Ile Gly Ile Ser Cys Pro Ile Val Pro Gly Ile Met Pro Ile
    210                 215                 220

Asn Asn Tyr Arg Gly Phe Leu Arg Met Thr Gly Phe Cys Lys Thr Lys
225                 230                 235                 240

Ile Pro Val Glu Val Met Ala Ala Leu Glu Pro Ile Lys Asp Asn Glu
                245                 250                 255

Glu Ala Val Lys Ala Tyr Gly Ile His Leu Gly Thr Glu Met Cys Lys
            260                 265                 270

Lys Met Leu Ala His Gly Val Lys Ser Leu His Leu Tyr Thr Leu Asn
        275                 280                 285

Met Glu Lys Ser Ala Leu Ala Ile Leu Met Asn Leu Gly Met Ile Asp
    290                 295                 300

Glu Ser Lys Ile Ser Arg Ser Leu Pro Trp Arg Arg Pro Ala Asn Val
305                 310                 315                 320

Phe Arg Thr Lys Glu Asp Val Arg Pro Ile Phe Trp Ala Asn Arg Pro
                325                 330                 335

Lys Ser Tyr Ile Ser Arg Thr Lys Gly Trp Glu Asp Phe Pro Gln Gly
            340                 345                 350

Arg Trp Gly Asp Ser Arg Ser Ala Ser Tyr Gly Ala Leu Ser Asp His
        355                 360                 365

Gln Phe Ser Arg Pro Arg Ala Arg Asp Lys Lys Leu Gln Gln Glu Trp
    370                 375                 380

Val Val Pro Leu Lys Ser Val Glu Asp Ile Gln Glu Lys Phe Lys Glu
385                 390                 395                 400

Leu Cys Leu Gly Asn Leu Lys Ser Ser Pro Trp Ser Glu Leu Asp Gly
                405                 410                 415

Leu Gln Pro Glu Thr Arg Ile Ile Asn Glu Gln Leu Ile Lys Val Asn
            420                 425                 430

Ser Lys Gly Phe Leu Thr Ile Asn Ser Gln Pro Ser Val Asn Ala Glu
        435                 440                 445
```

```
Arg Ser Asp Ser Pro Thr Val Gly Trp Gly Gly Pro Val Gly Tyr Val
     450                 455                 460

Tyr Gln Lys Ala Tyr Leu Glu Phe Phe Cys Ser Lys Glu Lys Leu Asp
465                 470                 475                 480

Ala Val Val Glu Lys Cys Lys Ala Leu Pro Ser Ile Thr Tyr Met Ala
                485                 490                 495

Val Asn Lys Gly Glu Gln Trp Val Ser Asn Thr Ala Gln Ala Asp Val
            500                 505                 510

Asn Ala Val Thr Trp Gly Val Phe Pro Ala Lys Glu Ile Ile Gln Pro
        515                 520                 525

Thr Ile Val Asp Pro Ala Ser Phe Asn Val Trp Lys Asp Glu Ala Phe
    530                 535                 540

Glu Thr Trp Ser Arg Ser Trp Ala Asn Leu Tyr Pro Glu Ala Asp Pro
545                 550                 555                 560

Ser Arg Asn Leu Leu Glu Glu Val Lys Asn Ser Tyr Tyr Leu Val Ser
                565                 570                 575

Leu Val Glu Asn Asp Tyr Ile Asn Gly Asp Ile Phe Ala Val Phe Ala
            580                 585                 590

Asp Leu
```

<210> 14
<211> 593
<212> PRT
<213> Zea mays

<400> 14

```
Met Lys Val Ile Glu Lys Ile Leu Glu Ala Ala Gly Asp Gly Arg Thr
1               5                   10                  15

Ala Phe Ser Phe Glu Tyr Phe Pro Pro Lys Thr Glu Glu Gly Val Glu
            20                  25                  30

Asn Leu Phe Glu Arg Met Asp Arg Met Val Ala His Gly Pro Ser Phe
        35                  40                  45

Cys Asp Ile Thr Trp Gly Ala Gly Gly Ser Thr Ala Asp Leu Thr Leu
    50                  55                  60

Glu Ile Ala Asn Arg Met Gln Asn Met Val Cys Val Glu Thr Met Met
65                  70                  75                  80

His Leu Thr Cys Thr Asn Met Pro Val Glu Lys Ile Asp His Ala Leu
                85                  90                  95

Glu Thr Ile Lys Ser Asn Gly Ile Gln Asn Val Leu Ala Leu Arg Gly
            100                 105                 110

Asp Pro Pro His Gly Gln Asp Lys Phe Val Gln Val Glu Gly Gly Phe
        115                 120                 125
```

Ala Cys Ala Leu Asp Leu Val Gln His Ile Arg Ala Lys Tyr Gly Asp
130 135 140

Tyr Phe Gly Ile Thr Val Ala Gly Tyr Pro Glu Ala His Pro Asp Ala
145 150 155 160

Ile Gln Gly Glu Gly Gly Ala Thr Leu Glu Ala Tyr Ser Asn Asp Leu
165 170 175

Ala Tyr Leu Lys Arg Lys Val Asp Ala Gly Ala Asp Leu Ile Val Thr
180 185 190

Gln Leu Phe Tyr Asp Thr Asp Ile Phe Leu Lys Phe Val Asn Asp Cys
195 200 205

Arg Gln Ile Gly Ile Thr Cys Pro Ile Val Pro Gly Ile Met Pro Ile
210 215 220

Asn Asn Tyr Lys Gly Phe Leu Arg Met Thr Gly Phe Cys Lys Thr Lys
225 230 235 240

Ile Pro Ser Glu Ile Thr Ala Ala Leu Asp Pro Ile Lys Asp Asn Glu
245 250 255

Glu Ala Val Arg Gln Tyr Gly Ile His Leu Gly Thr Glu Met Cys Lys
260 265 270

Lys Ile Leu Ala Thr Gly Ile Lys Thr Leu His Leu Tyr Thr Leu Asn
275 280 285

Met Asp Lys Ser Ala Ile Gly Ile Leu Met Asn Leu Gly Leu Ile Glu
290 295 300

Glu Ser Lys Val Ser Arg Pro Leu Pro Trp Arg Pro Ala Thr Asn Val
305 310 315 320

Phe Arg Val Lys Glu Asp Val Arg Pro Ile Phe Trp Ala Asn Arg Pro
325 330 335

Lys Ser Tyr Leu Lys Arg Thr Leu Gly Trp Asp Gln Tyr Pro His Gly
340 345 350

Arg Trp Gly Asp Ser Arg Asn Pro Ser Tyr Gly Ala Leu Thr Asp His
355 360 365

Gln Phe Thr Arg Pro Arg Gly Arg Gly Lys Lys Leu Gln Glu Glu Trp
370 375 380

Ala Val Pro Leu Lys Ser Val Glu Asp Ile Ser Glu Arg Phe Thr Asn
385 390 395 400

Phe Cys Gln Gly Lys Leu Thr Ser Ser Pro Trp Ser Glu Leu Asp Gly
405 410 415

Leu Gln Pro Glu Thr Lys Ile Ile Asp Asp Gln Leu Val Asn Ile Asn
420 425 430

Gln Lys Gly Phe Leu Thr Ile Asn Ser Gln Pro Ala Val Asn Gly Glu
435 440 445

```
Lys Ser Asp Ser Pro Thr Val Gly Trp Gly Gly Pro Gly Gly Tyr Val
    450                 455                 460

Tyr Gln Lys Ala Tyr Leu Glu Phe Phe Cys Ala Lys Glu Lys Leu Asp
465                 470                 475                 480

Gln Leu Ile Glu Lys Ile Lys Ala Phe Pro Ser Leu Thr Tyr Ile Ala
                485                 490                 495

Val Asn Lys Asp Gly Glu Thr Phe Ser Asn Ile Ser Pro Asn Ala Val
            500                 505                 510

Asn Ala Val Thr Trp Gly Val Phe Pro Gly Lys Glu Ile Ile Gln Pro
        515                 520                 525

Thr Val Val Asp His Ala Ser Phe Met Val Trp Lys Asp Glu Ala Phe
    530                 535                 540

Glu Ile Trp Thr Arg Gly Trp Gly Cys Met Phe Pro Glu Gly Asp Ser
545                 550                 555                 560

Ser Arg Glu Leu Leu Glu Lys Val Gln Lys Thr Tyr Tyr Leu Val Ser
                565                 570                 575

Leu Val Asp Asn Asp Tyr Val Gln Gly Asp Leu Phe Ala Ala Phe Lys
            580                 585                 590

Ile
```

<210> 15
<211> 679
<212> PRT
<213> Homo sapiens

<400> 15

```
Met Cys Arg Gly Cys Gly Cys Leu Pro Pro Asp Ala Pro Cys Pro Thr
1               5                   10                  15

Leu Cys Ser Arg Asn Pro Ala Met Val Asn Glu Ala Arg Gly Asn Ser
            20                  25                  30

Ser Leu Asn Pro Cys Leu Glu Gly Ser Ala Ser Ser Gly Ser Glu Ser
        35                  40                  45

Ser Lys Asp Ser Ser Arg Cys Ser Thr Pro Gly Leu Asp Pro Glu Arg
    50                  55                  60

His Glu Arg Leu Arg Glu Lys Met Arg Arg Arg Leu Glu Ser Gly Asp
65                  70                  75                  80

Lys Trp Phe Ser Leu Glu Phe Phe Pro Pro Arg Thr Ala Glu Gly Ala
                85                  90                  95

Val Asn Leu Ile Ser Arg Phe Asp Arg Met Ala Ala Gly Gly Pro Leu
            100                 105                 110

Tyr Ile Asp Val Thr Trp His Pro Ala Gly Asp Pro Gly Ser Asp Lys
        115                 120                 125
```

```
Glu Thr Ser Ser Met Met Ile Ala Ser Thr Ala Val Asn Tyr Cys Gly
    130                 135                 140

Leu Glu Thr Ile Leu His Met Thr Cys Cys Arg Gln Arg Leu Glu Glu
145                 150                 155                 160

Ile Thr Gly His Leu His Lys Ala Lys Gln Leu Gly Leu Lys Asn Ile
                165                 170                 175

Met Ala Leu Arg Gly Asp Pro Ile Gly Asp Gln Trp Glu Glu Glu Glu
            180                 185                 190

Gly Gly Phe Asn Tyr Ala Val Asp Leu Val Lys His Ile Arg Ser Glu
        195                 200                 205

Phe Gly Asp Tyr Phe Asp Ile Cys Val Ala Gly Tyr Pro Lys Gly His
    210                 215                 220

Pro Glu Ala Gly Ser Phe Glu Ala Asp Leu Lys His Leu Lys Glu Lys
225                 230                 235                 240

Val Ser Ala Gly Ala Asp Phe Ile Ile Thr Gln Leu Phe Phe Glu Ala
                245                 250                 255

Asp Thr Phe Phe Arg Phe Val Lys Ala Cys Thr Asp Met Gly Ile Thr
            260                 265                 270

Cys Pro Ile Val Pro Gly Ile Phe Pro Ile Gln Gly Tyr His Ser Leu
        275                 280                 285

Arg Gln Leu Val Lys Leu Ser Lys Leu Glu Val Pro Gln Glu Ile Lys
    290                 295                 300

Asp Val Ile Glu Pro Ile Lys Asp Asn Asp Ala Ala Ile Arg Asn Tyr
305                 310                 315                 320

Gly Ile Glu Leu Ala Val Ser Leu Cys Gln Glu Leu Leu Ala Ser Gly
                325                 330                 335

Leu Val Pro Gly Leu His Phe Tyr Thr Leu Asn Arg Glu Met Ala Thr
            340                 345                 350

Thr Glu Val Leu Lys Arg Leu Gly Met Trp Thr Glu Asp Pro Arg Arg
        355                 360                 365

Pro Leu Pro Trp Ala Leu Ser Ala His Pro Lys Arg Arg Glu Glu Asp
    370                 375                 380

Val Arg Pro Ile Phe Trp Ala Ser Arg Pro Lys Ser Tyr Ile Tyr Arg
385                 390                 395                 400

Thr Gln Glu Trp Asp Glu Phe Pro Asn Gly Arg Trp Gly Asn Ser Ser
                405                 410                 415

Ser Pro Ala Phe Gly Glu Leu Lys Asp Tyr Tyr Leu Phe Tyr Leu Lys
            420                 425                 430

Ser Lys Ser Pro Lys Glu Glu Leu Leu Lys Met Trp Gly Glu Glu Leu
        435                 440                 445
```

```
Thr Ser Glu Ala Ser Val Phe Glu Val Phe Val Leu Tyr Leu Ser Gly
    450                 455                 460

Glu Pro Asn Arg Asn Gly His Lys Val Thr Cys Leu Pro Trp Asn Asp
465                 470                 475                 480

Glu Pro Leu Ala Ala Glu Thr Ser Leu Leu Lys Glu Glu Leu Leu Arg
                485                 490                 495

Val Asn Arg Gln Gly Ile Leu Thr Ile Asn Ser Gln Pro Asn Ile Asn
            500                 505                 510

Gly Lys Pro Ser Ser Asp Pro Ile Val Gly Trp Gly Pro Ser Gly Gly
        515                 520                 525

Tyr Val Phe Gln Lys Ala Tyr Leu Glu Phe Phe Thr Ser Arg Glu Thr
    530                 535                 540

Ala Glu Ala Leu Leu Gln Val Leu Lys Lys Tyr Glu Leu Arg Val Asn
545                 550                 555                 560

Tyr His Leu Val Asn Val Lys Gly Glu Asn Ile Thr Asn Ala Pro Glu
                565                 570                 575

Leu Gln Pro Asn Ala Val Thr Trp Gly Ile Phe Pro Gly Arg Glu Ile
            580                 585                 590

Ile Gln Pro Thr Val Val Asp Pro Val Ser Phe Met Phe Trp Lys Asp
        595                 600                 605

Glu Ala Phe Ala Leu Trp Ile Glu Arg Trp Gly Lys Leu Tyr Glu Glu
    610                 615                 620

Glu Ser Pro Ser Arg Thr Ile Ile Gln Tyr Ile His Asp Asn Tyr Phe
625                 630                 635                 640

Leu Val Asn Leu Val Asp Asn Asp Phe Pro Leu Asp Asn Cys Leu Trp
                645                 650                 655

Gln Val Val Glu Asp Thr Leu Glu Leu Leu Asn Arg Pro Thr Gln Asn
            660                 665                 670

Ala Arg Glu Thr Glu Ala Pro
        675

<210>  16
<211>  599
<212>  PRT
<213>  Saccharomyces cerevisiae

<400>  16
Met Lys Ile Thr Glu Lys Leu Glu Gln His Arg Gln Thr Ser Gly Lys
1               5                   10                  15

Pro Thr Tyr Ser Phe Glu Tyr Phe Val Pro Lys Thr Thr Gln Gly Val
            20                  25                  30

Gln Asn Leu Tyr Asp Arg Met Asp Arg Met Tyr Glu Ala Ser Leu Pro
        35                  40                  45
```

```
Gln Phe Ile Asp Ile Thr Trp Asn Ala Gly Gly Gly Arg Leu Ser His
    50                  55                  60

Leu Ser Thr Asp Leu Val Ala Thr Ala Gln Ser Val Leu Gly Leu Glu
65                  70                  75                  80

Thr Cys Met His Leu Thr Cys Thr Asn Met Pro Ile Ser Met Ile Asp
                85                  90                  95

Asp Ala Leu Glu Asn Ala Tyr His Ser Gly Cys Gln Asn Ile Leu Ala
            100                 105                 110

Leu Arg Gly Asp Pro Pro Arg Asp Ala Glu Asn Trp Thr Pro Val Glu
        115                 120                 125

Gly Gly Phe Gln Tyr Ala Lys Asp Leu Ile Lys Tyr Ile Lys Ser Lys
    130                 135                 140

Tyr Gly Asp His Phe Ala Ile Gly Val Ala Gly Tyr Pro Glu Cys His
145                 150                 155                 160

Pro Glu Leu Pro Asn Lys Asp Val Lys Leu Asp Leu Glu Tyr Leu Ser
                165                 170                 175

Arg Arg Ser Thr Gly Gly Asp Phe Ile Ile Thr Gln Met Phe Tyr Asp
            180                 185                 190

Val Asp Asn Leu Leu Asn Trp Cys Ser Gln Val Arg Ala Ala Gly Met
        195                 200                 205

Asp Val Pro Ile Ile Pro Gly Ile Met Pro Ile Thr Thr Tyr Ala Ala
    210                 215                 220

Phe Leu Arg Arg Ile Gln Trp Gly Gln Ile Ser Ile Pro Gln His Phe
225                 230                 235                 240

Ser Ser Arg Leu Asp Pro Ile Lys Asp Asp Asp Glu Leu Val Arg Asp
                245                 250                 255

Ile Gly Thr Asn Leu Ile Val Glu Met Cys Gln Lys Leu Leu Asp Ser
            260                 265                 270

Gly Tyr Val Ser His Leu His Ile Tyr Thr Met Asn Leu Glu Lys Ala
        275                 280                 285

Pro Leu Met Ile Leu Glu Arg Leu Asn Ile Leu Pro Thr Glu Ser Glu
    290                 295                 300

Phe Asn Ala His Pro Leu Ala Val Leu Pro Trp Arg Lys Ser Leu Asn
305                 310                 315                 320

Pro Lys Arg Lys Asn Glu Glu Val Arg Pro Ile Phe Trp Lys Arg Arg
                325                 330                 335

Pro Tyr Ser Tyr Val Ala Arg Thr Ser Gln Trp Ala Val Asp Glu Phe
            340                 345                 350

Pro Asn Gly Arg Phe Gly Asp Ser Ser Ser Pro Ala Phe Gly Asp Leu
        355                 360                 365
```

```
Asp Leu Cys Gly Ser Asp Leu Ile Arg Gln Ser Ala Asn Lys Cys Leu
    370                 375                 380

Glu Leu Trp Ser Thr Pro Thr Ser Ile Asn Asp Val Ala Phe Leu Val
385                 390                 395                 400

Ile Asn Tyr Leu Asn Gly Asn Leu Lys Cys Leu Pro Trp Ser Asp Ile
                405                 410                 415

Pro Ile Asn Asp Glu Ile Asn Pro Ile Lys Ala His Leu Ile Glu Leu
            420                 425                 430

Asn Gln His Ser Ile Ile Thr Ile Asn Ser Gln Pro Gln Val Asn Gly
        435                 440                 445

Ile Arg Ser Asn Asp Lys Ile His Gly Trp Gly Pro Lys Asp Gly Tyr
    450                 455                 460

Val Tyr Gln Lys Gln Tyr Leu Glu Phe Met Leu Pro Lys Thr Lys Leu
465                 470                 475                 480

Pro Lys Leu Ile Asp Thr Leu Lys Asn Asn Glu Phe Leu Thr Tyr Phe
                485                 490                 495

Ala Ile Asp Ser Gln Gly Asp Leu Leu Ser Asn His Pro Asp Asn Ser
            500                 505                 510

Lys Ser Asn Ala Val Thr Trp Gly Ile Phe Pro Gly Arg Glu Ile Leu
        515                 520                 525

Gln Pro Thr Ile Val Glu Lys Ile Ser Phe Leu Ala Trp Lys Glu Glu
    530                 535                 540

Phe Tyr His Ile Leu Asn Glu Trp Lys Leu Asn Met Asn Lys Tyr Asp
545                 550                 555                 560

Lys Pro His Ser Ala Gln Phe Ile Gln Ser Leu Ile Asp Asp Tyr Cys
                565                 570                 575

Leu Val Asn Ile Val Asp Asn Asp Tyr Ile Ser Pro Asp Asp Gln Ile
            580                 585                 590

His Ser Ile Leu Leu Ser Leu
        595
```

<210> 17
<211> 595
<212> PRT
<213> Artificial

<220>
<223> Chimera of soybean MTHFR amino-terminal region and wheat MTHFR carboxy-terminal region

<400> 17

```
Met Lys Ile Ile Glu Lys Ile His Ala Ala Ser Ala Asp Pro Asn Arg
1               5                   10                  15
```

Val Val Phe Ser Phe Glu Phe Phe Pro Pro Lys Thr Glu Asp Gly Val
20 25 30

Asp Asn Leu Phe Glu Arg Met Asp Arg Met Val Val His Asn Pro Ser
35 40 45

Phe Cys Asp Ile Thr Trp Gly Ala Gly Gly Thr Thr Ala Asp Leu Thr
50 55 60

Leu Glu Ile Ala Asn Lys Met Gln Asn Ile Val Cys Val Glu Thr Met
65 70 75 80

Met His Leu Thr Cys Thr Asn Met Pro Val Glu Lys Ile Asp His Ala
85 90 95

Leu His Thr Ile Lys Ser Asn Gly Leu Gln Asn Val Leu Ala Leu Arg
100 105 110

Gly Asp Pro Pro His Gly Gln Asp Lys Phe Val Gln Val Glu Gly Gly
115 120 125

Phe Ala Cys Ala Arg Asp Leu Val Gln His Ile Arg Ala Lys Tyr Gly
130 135 140

Asp Tyr Phe Gly Ile Thr Val Ala Gly Tyr Pro Glu Ala His Pro Asp
145 150 155 160

Val Ile Glu Ser Asp Gly Leu Ala Thr Ser Glu Gly Tyr Gln Asn Asp
165 170 175

Leu Ala Tyr Leu Lys Ser Lys Val Asp Ala Gly Ala Asp Leu Ile Val
180 185 190

Thr Gln Leu Phe Tyr Asp Thr Asp Ile Phe Leu Lys Phe Val Asn Asp
195 200 205

Cys Arg Gln Ile Gly Ile Thr Cys Pro Ile Val Pro Gly Ile Met Pro
210 215 220

Ile Asn Asn Tyr Lys Gly Phe Ile Arg Met Thr Gly Phe Cys Lys Thr
225 230 235 240

Lys Ile Pro Ala Asp Ile Met Ala Ala Leu Glu Pro Ile Lys Asp Asn
245 250 255

Glu Glu Ala Val Lys Ala Tyr Gly Ile His Leu Gly Thr Glu Met Cys
260 265 270

Lys Lys Ile Leu Ala His Gly Ile Asn Thr Leu His Leu Tyr Thr Leu
275 280 285

Asn Met Glu Lys Ser Ala Leu Ala Ile Leu Met Asn Leu Gly Leu Ile
290 295 300

Glu Glu Thr Lys Val Ser Arg Ser Leu Pro Trp Arg Arg Pro Ala Asn
305 310 315 320

Val Phe Arg Val Lys Glu Asp Val Arg Pro Ile Phe Trp Ala Asn Arg
325 330 335

```
Pro Lys Ser Tyr Ile Ser Arg Thr Thr Gly Trp Asp Gln Tyr Pro His
            340                 345                 350

Gly Arg Trp Gly Asp Ser Arg Asn Pro Ser Tyr Gly Ala Leu Asn Asp
        355                 360                 365

His Gln Phe Thr Arg Pro Arg Gly Arg Gly Lys Lys Leu Gln Glu Glu
    370                 375                 380

Trp Ala Val Pro Leu Lys Ser Val Gln Asp Ile Asn Glu Arg Phe Val
385                 390                 395                 400

Asn Phe Cys Glu Gly Lys Leu Lys Ser Ser Pro Trp Ser Glu Leu Asp
                405                 410                 415

Gly Leu Gln Pro Glu Thr Thr Ile Ile Asp Asp Gln Leu Val Lys Ile
            420                 425                 430

Asn Ser Lys Gly Phe Leu Thr Ile Asn Ser Gln Pro Ala Val Asn Ala
        435                 440                 445

Glu Lys Ser Glu Ser Pro Ser Val Gly Trp Gly Gly Pro Gly Gly Tyr
    450                 455                 460

Val Tyr Gln Lys Ala Tyr Val Glu Phe Phe Cys Ala Lys Glu Lys Leu
465                 470                 475                 480

Gly Gln Leu Ile Glu Lys Ser Lys Ala Phe Pro Ser Leu Thr Tyr Ile
                485                 490                 495

Ala Val Asn Lys Glu Gly Glu Ser Ile Ser Asn Ile Pro Ala Asn Ala
            500                 505                 510

Val Asn Ala Val Thr Trp Gly Val Phe Pro Gly Lys Glu Ile Ile Gln
        515                 520                 525

Pro Thr Val Val Asp Ser Ala Ser Phe Met Val Trp Lys Asp Glu Ala
    530                 535                 540

Phe Glu Ile Trp Ser Arg Gly Trp Ala Cys Leu Phe Pro Glu Gly Asp
545                 550                 555                 560

Ser Ser Arg Glu Leu Leu Glu Gln Ile Gln Lys Ser Tyr Tyr Leu Val
                565                 570                 575

Ser Leu Val Asp Asn Asp Tyr Ile Ser Gly Asp Leu Phe Ala Ala Phe
            580                 585                 590

Lys Glu Ile
        595
```

<210> 18
<211> 6
<212> PRT
<213> Artificial

<220>
<223> Conserved amino acid motif

<400> 18
Val Arg Pro Ile Phe Trp
1 5